GUIDE 15 copies for S Approved for use

GREENHILL PRIMARY SCHOOLS

PRE-PLE JOINT MOCK EXAMINATION 2024

(SET IV)

MATHEMATICS

Time allowed: 2 hours 30 minutes

Index No.

Random No.						Personal No.		

Candidate's Name: ..... ALL .....

Stream: ..... **Campus:** .....

Signature: .....

Do not open this booklet until you are told to do so.
Read the following instructions carefully

1. This paper consists of two sections: A and B.
2. Section A has 20 questions (40 marks).
3. Section B has 12 questions (60 marks)
4. Attempt all questions. Answers to both sections must be written in spaces provided.
5. All answers must be written in blue or black ballpoint pen or ink but not in pencil.
   Diagrams should be drawn in pencil.
6. Crossing out of answers will lead to loss of marks.
7. Any handwriting that cannot be easily read may lead to loss of marks.
8. Do not fill anything in the box indicated for examiner's use only.

FOR EXAMINERS USE ONLY		
QN.NO.	**MARK**	**SIGN**
A		
B		
TOTAL		

SECTION A:

1. Set **W**={2, 3, 5, 7, 11}. How many proper subsets are in set **W**?

No of proper subsets $= (2^n) - 1$

$= (2^5) - 1$ my

$= (2 \times 2 \times 2 \times 2 \times 2) - 1$

$= 32 - 1$

31 proper subsets ✓

2. Express $(5 \times 10^2) + (4 \times 10^1) + (8 \times 10^{-2})$ as a single number.

$(5 \times 10 \times 10) + (4 \times 10) + \left(8 \times \frac{1}{10 \times 10}\right)$ my

$500 + 40 + 0.08$

Follow thru

$$\begin{array}{r} 500.00 \\ 40.00 \\ + \quad 0.08 \\ \hline 540.08 \end{array}$$ ✓

3. Round off **78293** to the nearest hundreds.

78293 = 78200 my

$+ \quad 100$

78300 ✓

4. Write **98** in base five.

B	No	R
5	98	3
5	19	4
5	3	3
	0	

R my

$98 \Rightarrow 343_{five}$ ✓

5. Use only distributive property to work out: (4.4x13) + (5.6x13)

$(4.4 \times 13) + (5.6 \times 13)$ ✓

$13(4.4 + 5.6)$ ✓

13×10.0

130 ✓

$+1$
4.4
$+5.6$
10.0

6. Find the LCM of 12, 18 and 9.

2	9	12	18
2	9	6	9
3	9	3	9
3	3	1	3
	1	1	1

✓ ✗

LCM $= 2 \times 2 \times 3 \times 3$

$= 4 \times 9$

$= 36$ ✓

(Follow thro' other methods)

7. Workout: $4\frac{1}{2} + 1\frac{1}{3}$

$4\frac{1}{2} + 1\frac{1}{3}$

$(4+1) + (\frac{1}{2} + \frac{1}{3})$ ✓

$5 + \frac{3+2}{6}$

$5 + \frac{5}{6}$

$5\frac{5}{6}$ ✓

$\frac{9}{2} + \frac{4}{3}$

$\frac{(3 \times 9) + (2 \times 4)}{6}$

$\frac{27+8}{6}$

$\frac{35}{6}$

$5\frac{5}{6}$

(Follow thro')

06

8. Express 250 metres as a ratio to 2 kilometres.

1km = 1000m.

2km = 2 × 1000 B1

= 2000

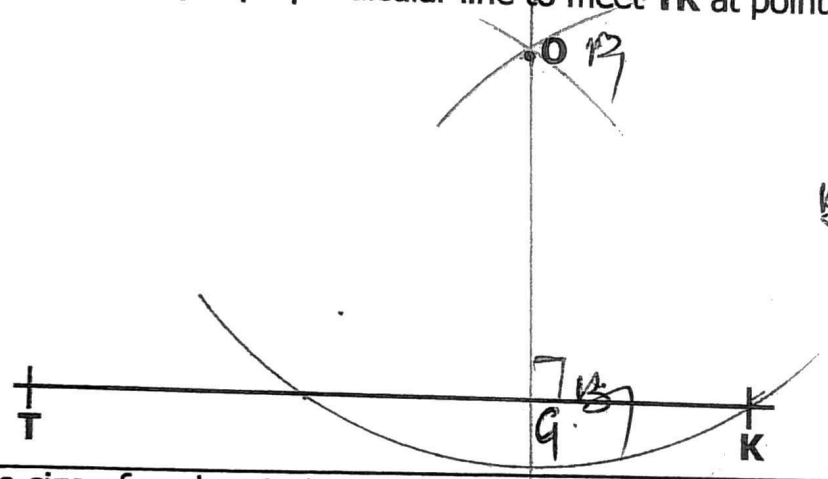
Ratio = 25¢ : 200¢

= 1 : 8 B1

$\frac{25 \div 25}{200 \div 25}$

$\frac{1}{8}$

9. From point **O**, drop a perpendicular line to meet **TK** at point **G**.



B1 B1 B1

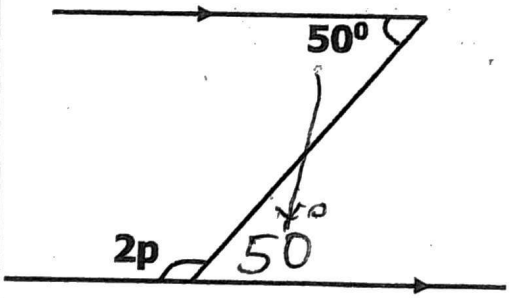
10. Find the size of each exterior angle of a regular octagon.

Octagon = 8 sides

ext. ∠ = $\frac{360^\circ}{8}$ M1

= 45° A1

11. Use the diagram below to work out the value of **p**.



2p + 50° = 180° (suppl. ∠s

2p + 50° − 50° = 180° − 50° M1

2p = 130°

$\frac{2p}{2} = \frac{130^\circ}{2}$ 65

p = 65° A1

08

12. Solve: 2 - 3k < 17

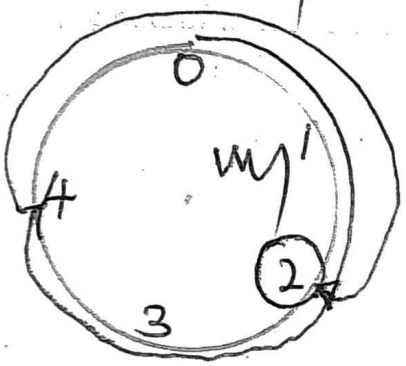
$2-3k < 17$

$2-2-3k < 17-2$ my

$-3k < 15$

$\frac{-3k}{-3} > \frac{15}{-3}$ ∴ $k > -5$ A

13. Workout: 4 + 3 = 2 A (finite 5) using a dial.



$4+3 = 2$ (finite 5).

14. Solve for **m**:

$4 - 2(4m - 2) = 0$.

$4-2(4m-2) = 0$

$4-8m+4 = 0$ my

$4+4-8m = 0$

$8-8-8m = 0-8$

$-8m = -8$

$\frac{-8m}{-8} = \frac{-8}{-8}$ $m = 1$ A

15. George took 2 hours 40 minutes to revise his books and 3 hours 50 minutes washing his clothes. How long did he take doing the two activities?

+	H	min
	2	40
+	3	50
	6	30

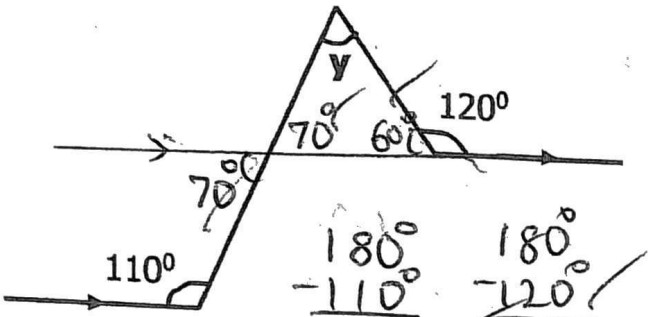
my

$40+50 = 90$

$90 \div 60 = 1h.30$

A 6h.30min. / $6\frac{1}{2}$h.

16. In the figure below, find the size of angle marked y.



180° − 110° = 70°

180° − 120° = 60°

$y + 60° + 70° = 180°$ sum

$y + 130° = 180°$

$y + 130° - 130° = 180° - 130°$

$y = 50°$ A1

180° − 130° = 50°

(follow thru)

17. Lillian bought 4 litres and 450 millilitres of paraffin in the morning. In the evening, she bought more 2 litres 550 millilitres of paraffin. How much paraffin did she buy that day?

L	ml.
4	450 sum
+ 2	550
7	000 A1

1L = 1000ml.

450 + 550 = 1000L.

1000 ÷ 1000 = 1 rem

18. There are 𝍸 𝍸 𝍸 𝍸 𝍸 |||| pupils in a p.6 class. Write this number of pupils in Roman numerals.

5 + 5 + 5 + 5 + 5 + 4

29 pupils B1

29 = 20 + 9

= XX IX

= XXIX B1 pupils.

19. Set Z= {All counting numbers}. What type of set is set Z?

Infinite set. B2

20. The transport from Kampala to Wakiso was sh.4500 but it is now sh.6000. In what ratio did the transport increase?

Sh. 4500 : Sh. 6000

$\frac{4500}{15} : \frac{6000}{15}$

3 : 4 || N: 0

4:3 Ag

$\frac{45 \div 15}{60 \div 15} = \frac{3}{4}$

02

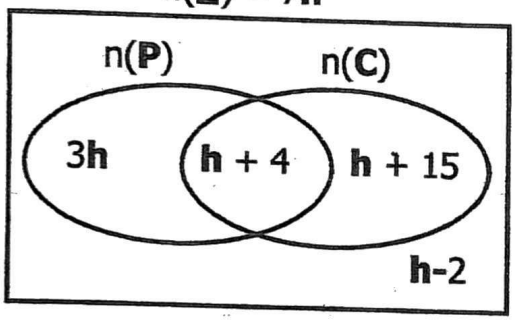
SECTION B:

Answer all questions in this section

Marks for each question are indicated in brackets

21. The Venn diagram below shows pupils who drank Pepsi(**P**) and Coke(**C**) at a picnic. (**h**-2) did not drink anything.

$n(\Sigma) = 7h$



(a) Find the value of **h**. ***(3 marks)***

$7h = 3h + h + 4 + h + 15 + h - 2$ My

$7h = 3h + h + 4 + h + 4 + 15 - 2$

$7h = 6h + 19 - 2$ My

$7h - 6h = 6h - 6h + 17$

$h = 17$ Ag

(b) Find the probability of picking a pupil who took none of the drinks. ***(2 marks)***

$7h = 7 \times h$

$= 7 \times 17$ My

$= 119$

Probability $= \frac{\text{D.C}}{\text{T.C}}$

$= \frac{17-2}{119}$ || $\frac{15}{119}$ Ag

05

22. Convert 24_{six} to base three. **(4 marks)**

$(2 \times 6^1) + (4 \times 6^0)$ my

$12 + 4$

16 my

B	ND	R
3	16	1 ↑
3	5	2
3	1	1
	0	

my

$\therefore 24_{six} = 121_{three}$ A1

23. (a) Simplify: $\frac{2p^2 \times 6p^3}{4p^3}$ **(2 marks)**

$\frac{2 \times p \times p \times 6 \times p \times p \times p}{4 \times p \times p \times p} = 3p^2$ my A1

$\frac{12p^5}{4p^3} = \frac{12p^{5-3}}{4}$

$= 3p^2$

Follow thru

(b) Find the value of k. **(2 marks)**

$2^2 \times 5^k = 100$

2	100
2	50
5	25
5	5 B1
	1

$\frac{2^2 \times 5^k}{2^2} = \frac{2^2 \times 5^2}{2^2}$ my

$5^k = 5^2$

$\therefore k = 2$ B1

Follow thru

24. A series of four consecutive odd numbers were listed in ascending order. If the last two numbers add up to **28**, find the unknown and the actual third number. **(5 marks)**

n	n+2	n+4	n+6
9	11	13	15

$n + 4 + n + 6 = 28$ my

$2n + 10 = 28$

$2n + 10 - 10 = 28 - 10$

$2n = 18$ my

$\frac{2n}{2} = \frac{18}{2}$ my

$n = 9$

3rd $= n + 4$

$= 9 + 4$ my

$= 13$ A1

13

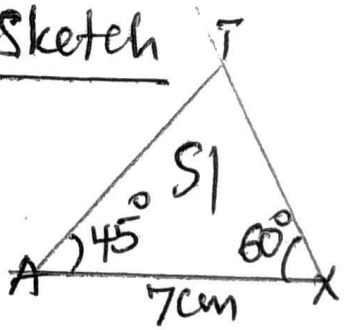
25. Twebaze bought **20** mangoes at **sh. 2000** each, but **y** mangoes got spoilt. He sold the rest at **sh. 3000** each making a profit of **sh. 8,000**. Calculate the value of **y**. ***(5 marks)***

B.P = 20 × Sh. 2000 B1
= Sh 40,000.
S.P = (20 − y) × 3000 A1
3000(20 − y) = 48000 A1
60000 − 3000y = 48000

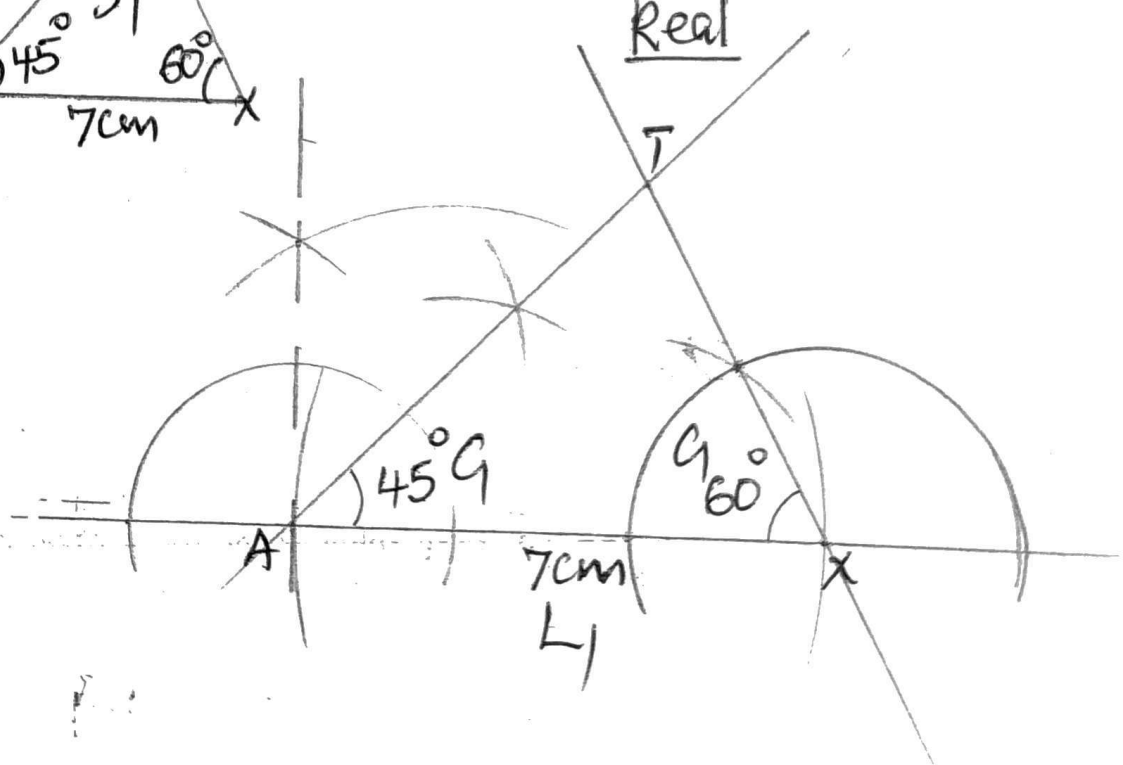
60000 − 48000 = 3000y my
12000 = 3000y
$\frac{12000}{3000} = \frac{3000y}{3000}$ my
4 = y
A1

26. (a) Using a ruler, pair of compasses and a sharp pencil, construct triangle **TAX** in which angle **TAX** = **45°**, angle **TXA** =**60°** and line **AX** =**7cm**. ***(4 marks)***

Sketch



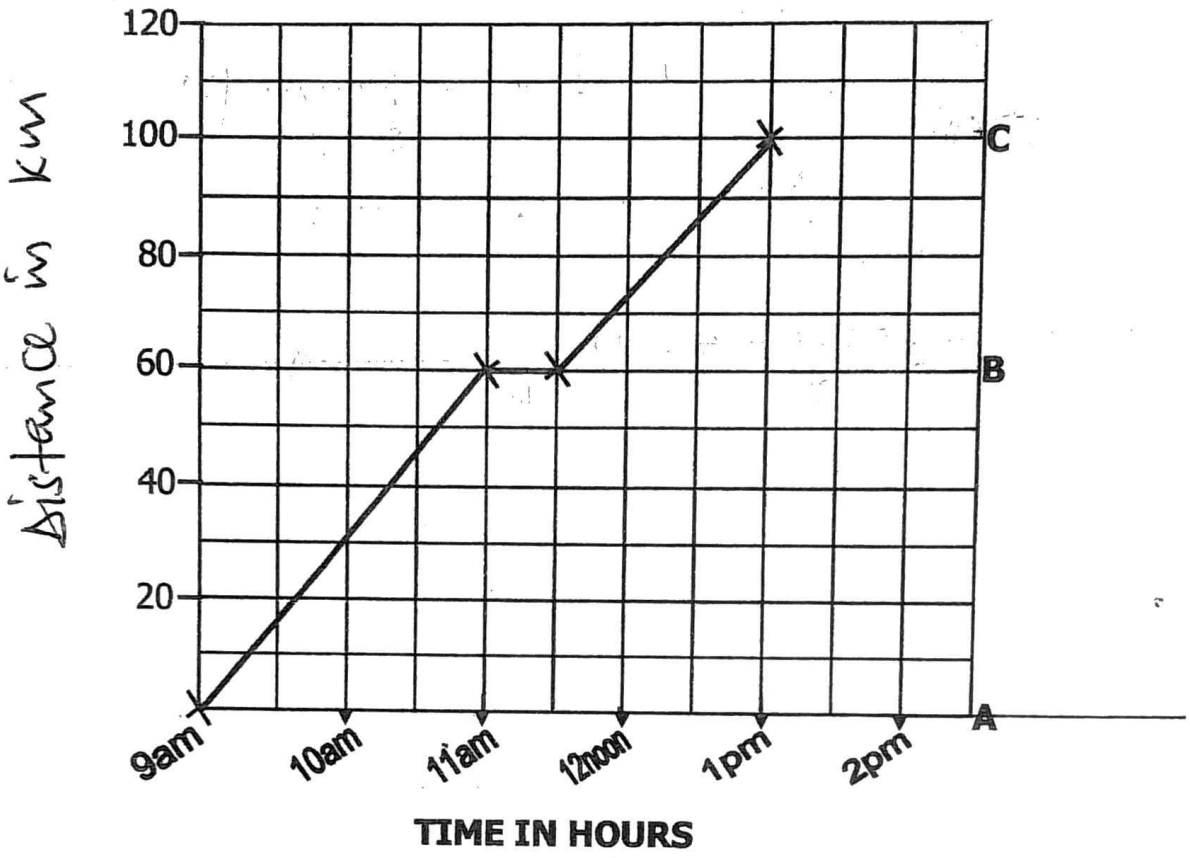
Real



(b) Measure line **TX**. ***(1 mark)***

$\overline{TX}$ = 5.2 cm B1

27. The graph below shows a cyclist's movement from town **A** to town **C** through town **B**.



(a) How far is town **B** from town **C**? ***(2 marks)***

100km − 60km

40km B2 (on sight)

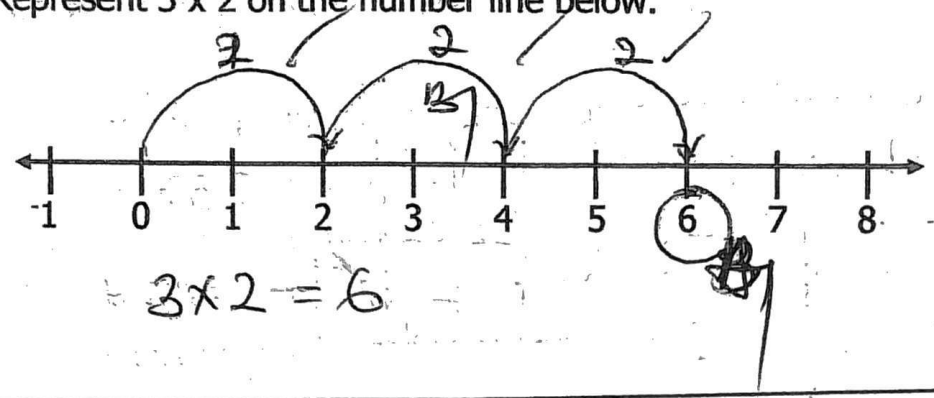
(b) Calculate the cyclist's average speed for the entire journey. ***(3 marks)***

Av. Speed = $\frac{TD}{TT}$

Speed = $\frac{100km}{4h.}$ $\quad S = 25km/h.$ Ag

05

28. (a) Represent 3 x 2 on the number line below. ***(2 marks)***



$3 \times 2 = 6$ B1

(b) A building was constructed in **25 BC** and it collapsed in **45 AD**. How old was the building at the time of its collapse? ***(2 marks)***

$45 - (-25) = 45 + 25$ M1

$= 70$ years A1

(c) Workout: $-2 - -3$ ***(1 mark)***

$-2 - (-3) = -2 + 3$

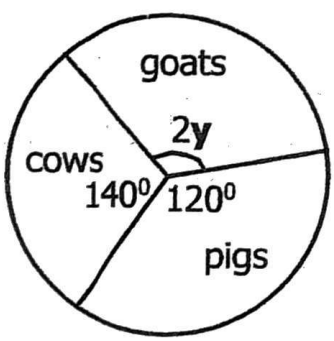
$= 3 - 2$

$= +1$ B1 (follow thru)

+ve + + +.
-ve − −

29. Use the pie-chart below to answer the questions that follow.

(a) Find the degrees that represent goats. ***(3 marks)***



$2y + 140^\circ + 120^\circ = 360^\circ$ M1

$2y + 260^\circ = 360^\circ$

$2y + 260^\circ - 260^\circ = 360^\circ - 260^\circ$ M1

$2y = 100^\circ$

$\therefore 100^\circ$ rep. goats A1

55

(b) If goats and pigs are 51, find the total number of animals. ***(3 marks)***

$100^\circ + 120^\circ$

220° B

$\frac{220^\circ}{360^\circ} \times n = 5$

$\frac{360^\circ}{220} \times \frac{220n}{360^\circ} = \frac{5 \times 360}{220}$

$220^\circ \Rightarrow 55$ my

$1^\circ \Rightarrow \frac{55}{220}$

$360^\circ \Rightarrow \frac{55 \times 360}{220}$ my

18×5

90 animals A

30. Mr. Igoma planted trees round his circular plot of land of diameter **56 metres** at an interval of **4 metres** apart.

(a) How many trees did he plant altogether? (Use $\pi = \frac{22}{7}$) ***(3 marks)***

$C = \frac{\pi D}{\text{Int.}}$

$C = \left(\frac{22}{7} \times 56\right) \div 4$ B

No of trees $= \frac{176}{4}$ B

44 A

(b) If each tree seedling was bought at **sh.1,500**, how much did he spend on all the seedlings? ***(3 marks)***

1 tree $\Rightarrow$ Sh. 1500 my

44 trees $\Rightarrow$ Sh. 1500×44 my

$=$ Sh. 66,000 A

31. Stella is 45 years old and her son Goodluck is 21 years old.

(a) How many years ago was Stella's age thrice that of the son? ***(3 marks)***

Stella	Son
45	21
$45 - x$	$21 - x$

$3(21 - x) = 45 - x$ my

$63 - 3x = 45 - x$

$63 - 45 = -x + 3x$

$\frac{18}{2} = \frac{2x}{2}$

$9 = x$

9 years ago. A

(b) What was their total age then? **(2 marks)**

$(45-9)+(21-9)$ My

$36+12$

48 years. A

32. By selling a radio at sh. 144,000, a trader made a profit of 20%.

(a) At how much did he buy the radio? **(3 marks)**

$100\%+20\%$

120% B

$120\% = Sh.144000$

$1\% = \frac{144000}{120}$

$100\% = \frac{12}{144000 \times 100} = Sh.120,000$

$120\% \times n = Sh.144000$ My

$\frac{120n}{100} = Sh.144000$

$\frac{1}{100} \times \frac{120}{1} \times n = Sh.\frac{12000}{144000 \times 100}$

$n = Sh.120,000$ A

(b) If the trader was to have a percentage profit of 30%, at how much would he have sold the radio? **(2 marks)**

$100\% + 30\%$

130% B $\frac{13}{100} \times 120,000$

Sh. 156,000 B

$100\% \Rightarrow Sh.120,000$

$1\% \Rightarrow Sh.\frac{120,000}{100}$

$130\% = Sh.\frac{120000 \times 13}{100}$

$= Sh.156,000$

07